OWNER'S MANUAL

PREMIER ONE

VACUUM TUBE POWER AMPLIFIER

conrad-johnson design, inc.
703 - 698 - 8581

Thank you for your considered purchase of a conrad-johnson Premier One amplifier. In it, you have acquired one of the finest pieces of musical reproduction equipment available today.

The Premier One amplifier was designed for the purpose of providing ourselves (and other members of the community of designers of high fidelity audio equipment) with a reference quality amplifier. Its unique circuit design embodies the results of 10 man-years of research into the technology of the reproduction of recorded music. The design has been uncompromisingly executed in the finest available component parts and each unit painstakingly assembled and tested to insure enduring sonic excellence and trouble-free operation.

Please take a few minutes to read this manual so that you will better understand the features and capabilities of your Premier One.

LIMITED WARRANTY FOR THE conrad-johnson PREMIER ONE

1. conrad-johnson design, inc. warrants to the original purchaser that the conrad-johnson Premier One will perform to specifications as published in the owner's manual and that it will be free of defects in materials and workmanship for a period of three years from the date of original purchase.
2. conrad-johnson will repair defective units without charge for labor or parts (with the exception of the vacuum tubes) subject to the following conditions:
   a) The unit must not have been altered or damaged through misuse, abuse, negligence, accident, or improper operation.
   b) The purchaser must provide evidence of purchase at the time service is requested.
   c) All repairs must be undertaken at the factory or other service center designated by conrad-johnson design, inc. Units submitted for warranty repairs must be shipped in the factory packing carton to conrad-johnson design or its designated service center, freight and insurance prepaid by the owner, and will be returned to the owner, freight and insurance prepaid by conrad-johnson design. Replacement cartons are available from the factory for a nominal charge.
   d) Normal wear and maintenance are not covered by this warranty.
3. The above warranty may be transferred to subsequent owners provided that the warranty registration card has been returned to conrad-johnson design, inc. within 30 days of the original purchase and that the registered owner provides the factory with a signed notice giving the new owner's name and address and the model and serial number of the unit.
4. Where permitted by law, conrad-johnson design's liability shall be limited to that set forth in this warranty. No other warranty of any kind, expressed or implied, is made by conrad-johnson design, inc., and all implied warranties, including merchantability and fitness for a particular "purpose", which exceed the obligations and time limits set forth herein are hereby disclaimed. conrad-johnson design, inc. shall not be liable for incidental or consequential damages. Some states do not allow the exclusion or limitation of incidental or consequential damages, or limitations on how long an implied warranty lasts, so the above limitation or exclusion may not apply to you.
5. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. Questions about warranty service should be addressed to:

Service Department
conrad-johnson design, inc.
2733 Merrilee Drive
Fairfax, Virginia 22031
(703) 698-8581

ABOUT conrad-johnson design

We are a small company offering exclusively audiophile products designed for our own use as well as our customers'. We believe that our commitment to the purchaser of our products is nearly unique in the industry. The services we offer to conrad-johnson owners includes

- Information - Registered owners of conrad-johnson equipment will be directly informed of new equipment we have to offer, They will also be informed of any significant changes in the design of their equipment resulting from our ongoing development program.
- Factory updating - Should significant design changes be made, conrad-johnson design will, whenever practical, offer to update existing equipment. This service will be offered at a minimal charge to cover parts, labor, and handling.
- Factory service - Any conrad-johnson product may be returned to the factory for service. All equipment serviced at the factory will perform to its published specifications when returned. Factory service will be offered at reasonable rates.
- Transferable warranty - conrad-johnson design guarantees its products, not the owner. Should you decide to sell the product, the warranty may be transferred to the new owner. (See Registering the Warranty.)

REGISTERING THE WARRANTY

Please return the enclosed card to the factory within 30 days of purchase to register the warranty. The warranty may be transferred to a new owner if it has been properly registered initially and if the registered owner sends a signed notice providing the name and address of the new owner and the model and serial number of the unit.

Proper registration of the warranty is important! Not only will it preserve transferability of your warranty, it will also enable us to inform you of any alterations in the design of a given model and of any new products we offer which are likely to be of interest to you.

CIRCUIT DESIGN

It has been our experience that simple designs with few active stages when executed with care and great attention to detail will be both more musical and more reliable than overcomplicated alternatives. Accordingly, the audio circuit of the Premier One is remarkably straight-forward. A cascode triode pair is employed at the input as a voltage amplifier. This arrangement offers high gain for a single stage and excellent phase linearity. This stage is direct coupled to a cathode coupled differential phase inverter made up of paralleled sections of high current triodes to provide balanced, low impedance drive to the push-pull output stage. The output stage utilizes paralleled 6550s - a total of six per channel. This stage features ultralinear operation which permits high power levels while greatly reducing the source impedance of the stage. As a result, the amplifier is capable of supplying the large current demands of high amplitude musical transients driven into reactive speaker loads. A massive main power supply of nearly 4,000 microfarads at more than 550 volts enables the Premier One to easily meet these extraordinary current demands. The supplies for the two channels are separated after the input condenser to reduce cross coupling of the stereo channels to negligible levels. Separate voltage regulators for the voltage amplifiers and phase inverters provide nearly absolute isolation of these sensitive stages from the output stage.

INSTALLATION

Because of the number and type of vacuum tubes used, the Premier One dissipates considerable heat (approximately 500 watts at idle). It is essential, therefore, that proper attention be paid to ventilation. The unit should be mounted horizontally on a flat hard surface so that the ventilation holes in the bottom are un-obstructed. At least eight inches of clearance should be provided above the unit, and at least four inches on the sides. The cabinet or shelf should be open at both front and back. For more restricted installations, cooling fans are essential.

The front panel of the Premier One will fit in a standard 19" equipment rack and is designed to carry the weight of the unit so that it may be rack mounted. However, be sure the equipment rack is capable of carrying the 135 pound weight of the amplifier. Again, it is important that adequate clearance be provided above the Premier One so that ventilation is not impeded. About eight inches of the front of the rack should be left open above the unit.

To minimize hum pickup, keep the unit well away from the preamplifier and turntable and route power cords away from input cables.

THE Premier One IS TO BE OPERATED ONLY ON AC LINE VOLTAGE OF 108 TO 125 VOLTS.

(Also available wired for 100 volt or 230 volt, 50/60 Hz current)

CONNECTION

Input:

Connect the left and right outputs from the preamplifier to the amplifier inputs for Channel A and Channel B.

Output:

The speaker wires will be connected to the amplifier's output terminals with one wire connected to the screw terminal marked C and the other to the 4, 8, or 16 ohm screw terminal. Proper connection of the speakers is critical for achieving optimum performance. There are three criteria for correct connection:

1. Correct Relative Phase: The two channels must be wired in phase. This means that when the same signal is applied to both channels, the right and left channel speaker diaphragms should move synchronously - in and out together. Terminals on the speakers are usually coded - one designated "C", "earth", "ground", "-" or black, the other designated "+" or red. "In phase" connection of the speakers can normally be achieved by taking care to connect the wire from the amplifier terminal marked C on each channel to the same coded terminal on each speaker.

   In phase connection of the speakers can be readily ascertained by ear. With the preamplifier mode switch in the MONO position, play a record of a solo vocalist. With the speakers in phase the voice should be clearly focused between the two speakers. With the speakers connected out of phase, the voice will be diffused, with no identifiable source. Relative phase may be reversed by switching the "+" and "-" leads at one speaker only.

2. Correct Absolute Phase: Musical transients are positive going - that is they first create a pressure front in the surrounding air. It is important that your stereo system reproduces transients in the same way since the ear can distinguish between positive and negative transients. This means that on a transient the speaker diaphragms should first move toward the listener - creating a pressure front.

Each component in your system is either phase correct (non-inverting) or phase inverting. If you know the phase of each component in your system (your Premier One is phase correct) then correct absolute phase is obtained by the following simple rule:

THE TOTAL NUMBER OF PHASE INVERSIONS IN THE SIGNAL PATH SHOULD BE EVEN.

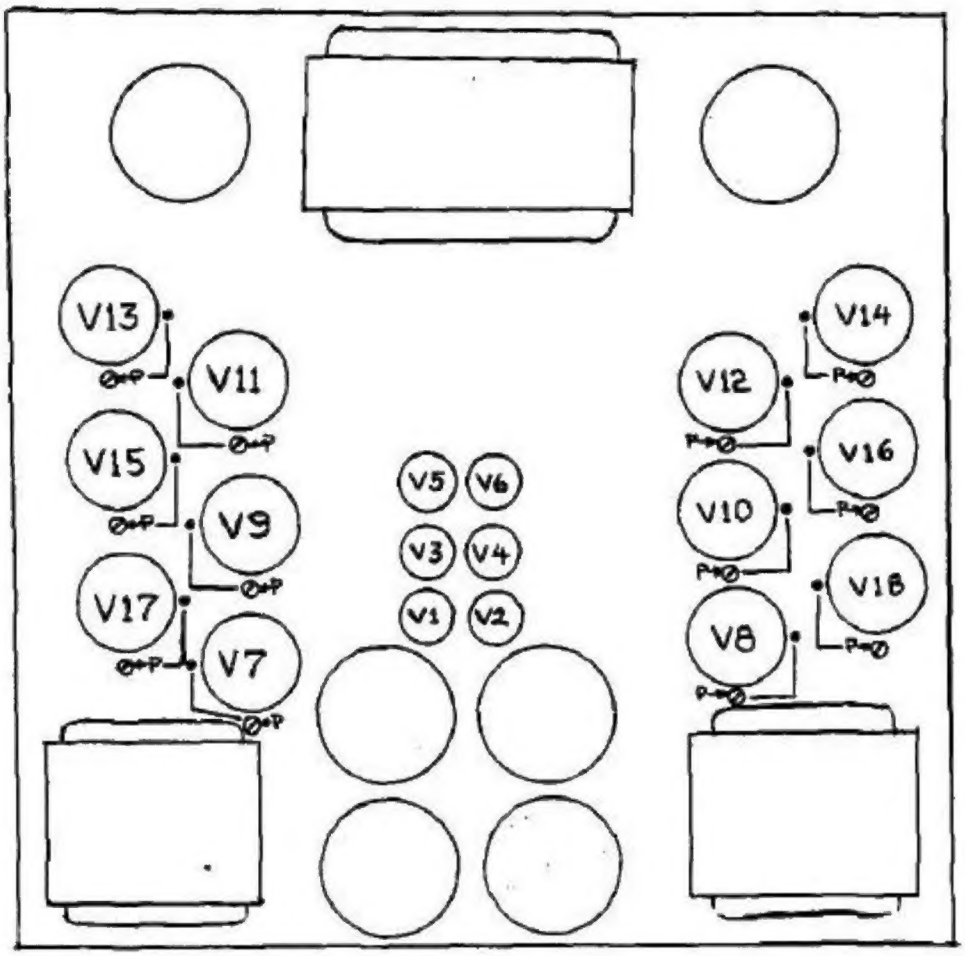
If the number of phase inverting components is either none or even, then simply wire the speakers in a phase correct manner (amplifier C to speaker amplifier 4, 8, or 16 to speaker "+".

If the number of phase inverting components is odd, then one more inversion should be added. This may either be accomplished at the speaker by wiring amplifier C to speaker "+" and 4, 8, or 16 to speaker "-" or by reversing the positive and ground leads of the cartridge. The latter method is preferable if one inversion occurs in either your pre-preamplifier (the HV-1 is inverting) or in your preamplifier phono stage (but not both). Making the correction at the cartridge will then permit phase correct tape recording and playback.

If you do not know the phase of each component in your system, try listening with your speakers hooked up both ways. When correctly phased, plucked strings and other sharp transients will sound noticeably better defined.

3. Impedance Matching - Matching the rated nominal impedance of your speakers with the amplifier output taps will not necessarily guarantee optimum performance. The sound with a given set of speakers will vary with the different impedance taps. We suggest listening to each of the three taps to select the best match for your speakers.

Tube Locations:



Tube Complement:

V1, V2	5751
V3, V4, V5, V6	6FQ7/6CG7
V7-V18	6550

TUBE REPLACEMENTS

The Premier One uses eighteen vacuum tubes of three different types: two 5751 (V1 and V2), four 6FQ7 (V3 through V6) and twelve 6550s (V7 through V18). Each type has been carefully chosen for its circuit application. It is well known that tubes of a given type vary sonically depending on the manufacturer. We have chosen the brands of tubes that we supply based on extensive auditioning of available brands. The choice of brand has been made solely on the basis of sonic performance and reliability without regard to either cost or prestige. We know of no vacuum tubes available which will improve the sonic performance of your Premier One. Also, the tubes in your amplifier have been tempered by a controlled burn in procedure that permits them to perform for a greatly extended period without sonic degradation. We anticipate one to two years of operation without degradation in normal use. We highly recommend that, when the time comes to replace the vacuum tubes, you purchase replacement tube sets from conrad-johnson design.

The Premier One has been designed to make tube replacement as simple as possible. Because the output tubes are individually biased, replacement tubes need not be matched pairs. No a-c balance adjustment is necessary. It is necessary to re-bias the amplifier when the output tubes are replaced. The Premier One has built in bias indicators so that no instruments are required to make this adjustment.

ADJUSTING OUTPUT TUBE BIAS

Biasing the amplifier is a simple procedure that can readily be done by the owner. Only a screwdriver is required. After replacing the tubes, the amplifier should be connected to a load (your loudspeakers will work fine) and there should be no signal applied to the amp. It should be connected to your preamplifier with the volume control fully down. Turn amplifier on. After about one minute, turn each of the twelve screwdriver adjustable controls (marked with a "p" in the diagram) counterclockwise until the associated indicator LED just goes off. Clockwise rotation may be necessary first to turn the LED on; do not turn the adjusting screw any farther in the clockwise direction once the LED has come on.

After the amplifier has warmed up for thirty minutes, the procedure just described should be repeated. NOTE: It is normal for these LEDs to flash or flicker when the amplifier is in use. This is normal and no cause for alarm.

This biasing procedure should be performed whenever the amplifier's output tubes are replaced and also after each six months of average use.

Fuses:

The AC line is fused to protect the power transformer. This fuse will not fail in normal operation. Failure of the fuse is a symptom of a more serious problem, so the unit should be taken to a qualifed service center. IN NO EVENT SHOULD THE FUSE BE REPLACED WITH A FUSE OF DIFFERENT TYPE OR RATING THAN THAT SUPPLIED BY THE FACTORY.

The power supplies to the output stages are fused to prevent damage to the amplifier in the event of failure of an output tube. When one of these fuses opens the corresponding channel will be dead. An LED adjacent to the fuseholder will light to indicate a blown fuse.

Fuses: ac line - 15 amp slow blow

output stage - KTK2 (2 amp fast blow)

SPECIFICATIONS

Power: 200 watts per channel, minimum RMS at 4, 8, or 16 ohms from 30Hz to 15kHz, with no more than 1% total harmonic distortion or intermodulation distortion.

Sensitivity: 1.0 volt to full power

Small Signal Distortion: less than .051 at midband

Phase: Phase correct (non-inverting)

Frequency Response: 20Hz to 20kHz to -.5 db

Hum and Noise: 100 db below full power output

Input Impedance: 100k ohms

Dimensions: 19 x 10 ½ x 12 ¼"

Weight: 135 lbs.

SERVICE

In the event your Premier One amplifier requires service, remove and individually box all tubes and pack in the tube cartons. Enclose the tube cartons with the amp, repack in the original shipping crate and ship freight prepaid to;

Service Department
conrad-johnson design, inc.
2733 Merrilee Drive
Fairfax, VA 22031

Be sure to enclose a note explaining the problem you are having in as much detail as possible. If the problem is intermittant, please indicate. If you do not have the original packing material, replacements are available from conrad-johnson design.

If you have any questions about service or other questions about operation of your Premier One, call customer service at 703-698-8581.